

WHAT IS CLAIMED IS:

1. An ink tank capable of introducing ink into the ink tank through an inlet by a negative pressure introduced
5 into the ink tank through a suction port, comprising:

gas-liquid separating means which is provided at the suction port and which permits gas to pass but inhibits ink from passing.

- 10 2. An ink tank as claimed in Claim 1, wherein the gas-liquid separating means is a gas-permeable membrane made of a material selected from a tetrafluoride ethylene resin and other porous resin materials.

- 15 3. An ink tank as claimed in Claim 1, wherein the gas-liquid separating means is a gas-permeable membrane made of a material selected from porcelain, unglazed pottery, ceramic, and other porous materials.

- 20 4. An ink tank as claimed in Claim 1, further comprising:
an ink absorber which is provided in the ink tank and which is capable of retaining ink by absorption.

- 25 5. An ink tank as claimed in Claim 4, wherein a space is provided between the gas-liquid separating means and the ink absorber.

6. An ink tank as claimed in Claim 5, wherein
the space is provided an opening portion that opens
toward the outside of the ink tank and an opening portion
5 that opens toward the inner side of the ink tank, and
areas of the respective opening portions are
different from each other.

10 7. An ink tank as claimed in Claim 6, wherein
an inner wall surface that defines the space is
provided as a tapered surface.

15 8. An ink tank as claimed in Claim 6, wherein
an inner wall surface that defines the space is
provided as a curved surface.

9. An ink tank as claimed in Claim 5, wherein
the gas-liquid separating means is placed on an inner
wall surface that defines the space.

20 10. An ink tank as claimed in Claim 5, wherein
an inner wall surface that defines the space is
subjected to a surface treatment.

25 11. An ink tank as claimed in Claim 1, wherein
the surface treatment is a water-repellent
treatment.

12. An ink tank as claimed in Claim 1, further comprising:

5 a supply port for supplying ink stored in the ink tank to the outside.

13. An ink tank as claimed in Claim 1, further comprising:

10 an ink absorber which is provided in the ink tank and which is capable of retaining ink by absorption, wherein the ink introduced through the inlet is absorbed in the ink absorber and the ink being absorbed reaches the supply port before reaching the gas-liquid separating means.

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14. An ink tank as claimed in Claim 13, wherein

the distance between the inlet and the supply port is shorter than the distance between the inlet and the gas-liquid separating means.

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15. An ink tank as claimed in Claim 12, wherein

the supply port is connectable to an ink-jet printing head which is able to eject ink.

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16. An ink tank as claimed in Claim 1, wherein

a plurality of the ink tanks are combined each other as an ink tank assembly.

17. An ink tank as claimed in Claim 16, wherein
the respective suction ports of the plurality of the
ink tanks are communicated with a common suction port that
5 is common to the plurality of the ink tanks.

18. An ink tank as claimed in Claim 16, wherein
the respective gas-liquid separating means of the
plurality of the ink tanks have different properties.
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19. An ink tank as claimed in Claim 16, wherein
the respective gas-liquid separating means of the
plurality of the ink tanks have different shapes.

20. An ink tank as claimed in Claim 17, wherein
the respective gas-liquid separating means of the
plurality of the ink tanks vary degree of negative pressure
to be introduced into the plurality of the ink tanks, by
the ink tank.
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21. An ink tank as claimed in Claim 20, wherein
the respective gas-liquid separating means of the
plurality of the ink tanks are porous bodies having a
different pore diameter.
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22. An ink tank as claimed in Claim 20, wherein
the respective gas-liquid separating means of the
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plurality of the ink tanks are porous bodies having a different thickness.

23. An ink tank as claimed in Claim 17, wherein
5 the respective suction ports of the plurality of the ink tanks have different opening area, so that degree of negative pressure to be introduced into the plurality of the ink tanks is varied, by the ink tank.

24. An ink tank as claimed in Claim 23, wherein
10 the opening area of the suction port of the respective ink tank is variable.

25. An ink tank as claimed in Claim 16, wherein
15 the plurality of the ink tanks include at least two different types of ink.

26. An ink tank as claimed in Claim 25, wherein
20 the gas-liquid separating means of the plurality of the ink tanks increase the negative pressure to be introduced into the ink tank though the suction port according to increase of a flow resistance of ink to be stored.

27. An ink tank as claimed in Claim 16, wherein
25 the plurality of the ink tanks have different capacity of ink.

28. An ink tank as claimed in Claim 27, wherein
the gas-liquid separating means of the plurality of
the ink tanks increase the negative pressure to be
5 introduced into the ink tank through the suction port
according to increase of the capacity of ink.

29. An ink tank as claimed in Claim 17, further
comprising:
10 a joint portion which is provided at the common
suction port and which is connectable to a suction passage.

30. An ink-jet cartridge comprising:
an ink tank as claimed in Claim 1; and
15 an ink-jet printing head which is able to eject ink
introduced from the ink tank.

31. An ink-jet cartridge as claimed Claim 30, wherein
the ink-jet printing head is provided with
20 electrothermal-converting elements that generate thermal
energies as energies of ejecting ink.

32. An ink-supplying device for supplying ink to an
ink tank as claimed in claim 1 or an ink tank of an ink-jet
25 cartridge as claimed in Claim 30, comprising:

ink-supplying means for supplying ink stored in a
main ink tank into the ink tank through the inlet; and

negative-pressure loading means for loading negative pressure caused by a suction pump into the ink tank through the suction port.

5 33. An ink-supplying device as claimed in Claim 32, further comprising:

a joint portion for releasably connecting between the ink-supplying means and the inlet of the ink tank; and

10 a joint member for releasably connecting between the ink-supplying means and the suction port of the ink tank.

34. An ink-supplying device for supplying ink to an ink tank as claimed in claim 15 or an ink tank of an ink-jet cartridge as claimed in Claim 30, comprising:

15 ink-supplying means for supplying ink stored in a main ink tank into the ink tank through the inlet;

negative-pressure loading means for loading negative pressure caused by a suction pump into the ink tank through the suction port; and

20 capping means capable of capping an ink eject port of the printing head by a cap member.

35. An ink-supplying device as claimed in Claim 34, wherein

25 the cap member is able to close the ink eject port when the ink tank is supplied ink.

36. An ink-supplying device as claimed in Claim 34,
further comprising:

negative-pressure loading means for the recovery
process which load negative pressure caused by a suction
5 pump into the cap member so that discharge ink from the
ink eject port by suction.

37. An ink-supplying device as claimed in Claim 36,
wherein

10 the suction pump of the negative-pressure loading
means also functions as the suction pump of the
negative-pressure loading means for the recovery process.

38. An ink-supplying device as claimed in Claim 34,
15 further comprising:

detecting means for detecting the presence or absence
of ink in the printing head.

39. An ink-jet printing apparatus, comprising:

20 a mounting portion on which an ink tank as claimed in
Claim 1 and an ink-jet printing head are mountable, where
the ink-jet printing is able to eject ink supplied from
the ink tank; and

transfer means which performs the relative movements
25 of the ink-jet printing head and a printing medium.

40. An ink-jet printing apparatus as claimed in Claim

39, wherein

the ink-jet printing head is provided with electrothermal-converting elements that generate thermal energies as energies of ejecting ink.

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41. An ink-jet printing apparatus, comprising:

a mounting portion on which an ink-jet cartridge as claimed in Claim 30; and

transfer means for relatively moving the ink-jet
10 cartridge and a printing medium.

42. An ink-jet printing apparatus as claimed in Claim 39, further comprising:

an ink-supplying device as claimed in Claim 32.

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43. An ink-jet printing apparatus as claimed in Claim 39, further comprising:

an ink-supplying device as claimed in Claim 34.

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44. An ink-jet printing apparatus as claimed in Claim 42, further comprising:

means for forming ink meniscus on the ink eject port by the recovery process which discharges ink from the ink eject port of the ink-jet printing head under suction
25 before supplying of ink to the ink tank.

45. An ink-jet printing apparatus as claimed in Claim

43, further comprising:

means for forming ink meniscus on the ink eject port
by the recovery process which discharges ink from the ink
eject port of the ink-jet printing head under suction
5 before supplying of ink to the ink tank.

46. An ink-jet printing apparatus as claimed in Claim
42, wherein

ink in the ink tank is moved away from the gas-liquid
10 separating means by a recovery process which discharges
ink from the ink eject port of the printing head under
suction after supplying ink to the ink tank.

47. An ink-jet printing apparatus as claimed in Claim
15 43, wherein

ink in the ink tank is moved away from the gas-liquid
separating means by a recovery process which discharges
ink from the ink eject port of the printing head under
suction after supplying ink to the ink tank.

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48. An ink-jet printing apparatus as claimed in Claim
42, wherein

ink in the ink tank is moved away from the gas-liquid
separating means by ejecting ink which is not responsible
25 for an image formation from the ink eject port of the
printing head after the supply ink to the ink tank.

49. An ink-jet printing apparatus as claimed in Claim
43, wherein

ink in the ink tank is moved away from the gas-liquid
separating means by ejecting ink which is not responsible
5 for an image formation from the ink eject port of the
printing head after the supply ink to the ink tank.

50. An ink-jet printing apparatus as claimed in Claim
42, further comprising:

10 negative-pressure controlling means for applying
negative pressure from the outside to the ink eject port
of the ink-jet printing head in addition to introduce
negative pressure into the ink tank through the suction
port at the time of supplying ink to the ink tank.

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51. An ink-jet printing apparatus as claimed in Claim
43, further comprising:

negative-pressure controlling means for applying
negative pressure from the outside to the ink eject port
20 of the ink-jet printing head in addition to introduce
negative pressure into the ink tank through the suction
port at the time of supplying ink to the ink tank.

52. An ink-jet printing apparatus as claimed in Claim
25 50, wherein

the negative pressure to be applied on the ink eject
port of the printing head is not enough to suck ink from

the ink eject port.

53. An ink-jet printing apparatus as claimed in Claim 51, wherein

5 the negative pressure to be applied on the ink eject port of the printing head is not enough to suck ink from the ink eject port.

54. An ink-jet printing apparatus as claimed in Claim 10 50, wherein

the negative pressure to be applied on the ink eject port of the printing head, when the ink touches the gas-liquid separating means, is not enough to suck ink from the ink eject port.

15 55. An ink-jet printing apparatus as claimed in Claim 51, wherein

the negative pressure to be applied on the ink eject port of the printing head, when the ink touches the 20 gas-liquid separating means, is not enough to suck ink from the ink eject port.

56. An ink-jet printing apparatus as claimed in Claim 50, wherein

25 the negative pressure to be applied on the ink eject port of the printing head, when the ink touches the gas-liquid separating means, is able to suck ink from the

ink eject port.

57. An ink-jet printing apparatus as claimed in Claim 51, wherein

5 the negative pressure to be applied on the ink eject port of the printing head, when the ink touches the gas-liquid separating means, is able to suck ink from the ink eject port.

10 58. A method for supplying ink to an ink tank as claimed in Claim 1 and an ink tank of an ink cartridge as claimed in Claim 30, comprising the steps of:

supplying ink into the ink tank from the inlet by loading negative pressure into the ink tank from the
15 suction port through the gas-liquid separating means; and
stopping the load of negative pressure into the ink tank from the suction port.

59. A method for supplying ink as claimed in claim 20 58, wherein

with respect to a plurality of the ink tanks, loading negative pressure into the ink tank from the suction port through the gas-liquid separating means, so that the supply of ink is concurrently performed on the plurality of the
25 ink tanks.

60. An ink-jet printing apparatus, comprising:

a mounting portion on which an ink tank as claimed in Claim 1 and an ink-jet printing head are mountable, where the ink-jet printing is able to eject ink supplied from the ink tank;

5 transfer means which performs the relative movements of the ink-jet printing head and a printing medium: and means for forming ink meniscus on the ink eject port by the recovery process which discharges ink from the ink eject port of the ink-jet printing head under suction
10 before supplying of ink to the ink tank.

61. An ink tank as claimed in Claim 1, wherein the gas-liquid separating means is provided with a member made of a porous material with an oil repellent
15 finish.

62. An ink tank as claimed in Claim 61, wherein the gas-liquid separating means is an gas-permeable membrane made of a material selected from a tetrafluoride
20 ethylene resin, a polyolefin resin, and other porous resin materials, which is subjected to an oil-repellent finish.

63. An ink tank as claimed in Claim 61, wherein the gas-liquid separating means is an gas-permeable
25 membrane made of a material selected from porcelain, unglazed pottery, ceramic, and other porous materials, which is subjected to an oil-repellent finish.

64. An ink-jet printing apparatus for printing an image on a printing medium employing an ink-jet printing head capable of ejecting ink supplied from an ink tank,
5 comprising:

negative-pressure loading means which is able to introduce negative pressure into the ink tank;

ink-supplying means for supplying ink into the ink tank using the negative pressure in the ink tank;

10 gas-liquid separating means which lies in a negative-pressure loading passage between the ink tank and the negative-pressure loading means and which permits gas to pass but inhibits ink from passing; and

15 disrupting means capable of disrupting a midcourse portion of the negative-pressure loading passage between the ink tank and the gas-liquid separating means.

65. An ink-jet printing apparatus as claimed in Claim 64, wherein

20 the disrupting means disrupts the midcourse portion of the negative-pressure loading passage at the time of supplying ink to the ink tank.

66. An ink-jet printing apparatus as claimed in
25 Claim 64, wherein

the disrupting means has a connecting portion which connects the midcourse portion releasable.

67. An ink-jet printing apparatus as claimed in Claim
64, further comprising:

moving means for moving the ink tank, wherein
5 the disrupting means connects the midcourse portion
of the negative-pressure loading passage when the ink tank
is moved to a predetermined ink-supplying position, and
disrupts the midcourse portion of the negative-pressure
loading passage when the ink tank is moved away from the
10 predetermined ink-supplying position.

68. An ink-jet printing apparatus as claimed in Claim
67, wherein

the moving means moves the ink-jet printing head
15 together with the ink tank.

69. An ink-jet printing apparatus as claimed in Claim
64, wherein

the gas-liquid separating means is moved between the
20 position for communicating with the inside of the ink tank
and the position for never communicating with the inside
of the ink tank.

70. An ink-jet printing apparatus as claimed in Claim
25 64, further comprising:

wiping means for wiping the gas-liquid separating
means.

71. An ink-jet printing apparatus as claimed in Claim
64, wherein

the gas-liquid separating means is an gas-permeable
5 membrane made of a material selected from a tetrafluoride
ethylene resin and other porous resin materials.

72. An ink-jet printing apparatus as claimed in Claim
64, wherein

10 the ink-jet printing head is provided with
electrothermal-converting elements that generate thermal
energies as energies of eject ink.

73. An ink-supplying device, comprising:
15 negative-pressure loading means which is able to
introduce negative pressure into an ink tank;

ink-supplying means for supplying ink into the ink
tank using the negative pressure in the ink tank;

gas-liquid separating means which lies in a
20 negative-pressure loading passage between the ink tank and
the negative-pressure loading means and which permits gas
to pass but inhibits ink from passing; and

disrupting means capable of disrupting a midcourse
portion of the negative-pressure loading passage between
25 the ink tank and the gas-liquid separating means.

74. An ink-supplying device as claimed in Claim 73,

wherein

the disrupting means disrupts the midcourse portion of the negative-pressure loading passage at the time of supplying ink to the ink tank.

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75. An ink-supplying device as claimed in Claim 73, wherein

the disrupting means has a connecting portion which connects the midcourse portion releasably.

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76. A method for supplying ink to an ink tank, comprising:

gas-liquid separating means which lies in a negative-pressure loading passage between the ink tank and the negative-pressure loading means and which permits gas to pass but inhibits ink from passing; and

disrupting means for disrupting a midcourse portion of the negative-pressure loading passage between the ink tank and the gas-liquid separating means; comprising the steps of:

loading negative pressure into the ink tank through the negative-pressure loading passage;

supplying ink into the ink tank using negative pressure in the ink tank;

stopping the loading of negative pressure into the ink tank by the gas-liquid separating means when ink touches the gas-liquid separating means; and

disrupting the midcourse portion by the disrupting means except when ink is supplied into the ink tank.

77. An ink-jet printing apparatus as claimed in Claim
5 64, wherein

the gas-liquid separating means is provided with a member made of a porous material with an oil repellent finish.

10 78. An ink-jet printing apparatus as claimed in Claim 77, wherein

the gas-liquid separating means is an gas-permeable membrane made of a material selected from a tetrafluoride ethylene resin, a polyolefin resin, and other porous resin
15 materials, which is subjected to an oil-repellent finish.

79. An ink-jet printing apparatus as claimed in Claim 77, wherein

the gas-liquid separating means is an gas-permeable
20 membrane made of a material selected from porcelain, unglazed pottery, ceramic, and other porous materials, which is subjected to an oil-repellent finish.

80. An ink-supplying device as claimed in Claim 73,
25 wherein

the gas-liquid separating means is provided with a member made of a porous material with an oil repellent

finish.

81. An ink-supplying device as claimed in Claim 80,
wherein

5 the gas-liquid separating means is an gas-permeable
membrane made of a material selected from a tetrafluoride
ethylene resin, a polyolefin resin, and other porous resin
materials, which is subjected to an oil-repellent finish.

10 82. An ink-supplying device as claimed in Claim 80,
wherein

the gas-liquid separating means is an gas-permeable
membrane made of a material selected from porcelain,
unglazed pottery, ceramic, and other porous materials,
15 which is subjected to an oil-repellent finish.

83. A method for supplying ink as claimed in Claim
76, wherein

the gas-liquid separating means is provided with a
20 member made of a porous material with an oil repellent
finish.

84. A method for supplying ink as claimed in Claim
83, wherein

25 the gas-liquid separating means is an gas-permeable
membrane made of a material selected from a tetrafluoride
ethylene resin, a polyolefin resin, and other porous resin

materials, which is subjected to an oil-repellent finish.

85. A method for supplying ink as claimed in Claim 83, wherein

5 the gas-liquid separating means is an gas-permeable membrane made of a material selected from porcelain, unglazed pottery, ceramic, and other porous materials, which is subjected to an oil-repellent finish.

10 86. An ink tank which has an ink-supplying port for supplying ink into an ink-jet printing head, and which is capable of introducing ink into the ink tank by negative pressure introduced into the ink tank, comprising:

a valve provided at the ink-supplying port, which
15 closes the ink-supplying port by negative pressure higher than a predetermined level in the ink tank.

87. An ink tank as claimed in Claim 86, wherein
the valve permits ink to pass from the ink tank to the
20 ink-jet printing head.

88. An ink tank as claimed in Claim 86, wherein
the valve inhibits ink from the ink-jet printing head
to the ink tank.

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89. An ink tank as claimed in Claim 86, wherein
a gas-liquid separating means which permits gas to

pass but inhibits ink from passing and which is provided at a suction port for introducing negative pressure into the ink tank.

5 90. An ink tank as claimed in Claim 86, wherein the ink-supplying port is provided with a filter.

91. An ink tank as claimed in Claim 90, wherein the filter and a valve body of the valve are assembled
10 together.

92. An ink tank as claimed in Claim 86, wherein a valve body of the valve is a sheet-shaped elastic material.
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93. An ink tank as claimed in Claim 86, wherein a valve body of the valve is made of a material selected from the group consisting of: polyethylene, polyvinylidene fluoride, polyvinylidene, polyethylene vinyl alcohol,
20 polyethylene terephthalate, and mixtures thereof.

94. An ink-jet printing head capable of ejecting ink supplied from an ink tank through an ink-supplying port, comprising:

25 a valve provided at a connecting port connected to the ink-supplying port, which closes the ink-supplying port by negative pressure higher than a predetermined level in

the ink tank.

95. An ink-jet printing head as claimed in Claim 94,
wherein

5 the valve permits ink to pass from the ink tank to the
ink-jet printing head.

96. An ink-jet printing head as claimed in Claim 94,
wherein

10 the valve inhibits ink from the ink-jet printing head
to the ink tank.

97. An ink-jet printing head as claimed in Claim 94,
wherein

15 the connecting port is provided with a filter.

98. An ink-jet printing head as claimed in Claim 97,
wherein

the filter and a valve body of the valve are assembled
20 together.

99. An ink-jet printing head as claimed in Claim 94,
wherein

a valve body of the valve is a sheet-shaped elastic
25 material.

100. An ink-jet printing head as claimed in Claim 94,

wherein

a valve body of the valve is made of a material selected from the group consisting of: polyethylene, polyvinylidene fluoride, polyvinylidene, polyethylene vinyl alcohol,
5 polyethylene terephthalate, and mixtures thereof.

101. An ink-jet printing head as claimed in Claim 94, comprising:

an electrothermal-converting elements which generate
10 thermal energies as energies of eject ink.

102. An ink-jet cartridge comprising:

an ink tank as claimed in Claim 86; and
an ink-jet printing head capable of ejecting ink
15 supplied from an ink tank through an ink-supplying port.

103. An ink-jet cartridge comprising:

an ink-jet printing head as claimed in Claim 94; and
an ink tank capable of supplying ink into the ink-
20 jet printing head through the connecting port.

104. An ink-jet printing apparatus comprising:

a tank mounting portion on which an ink tank as claimed in Claim 86 is mountable;
25 a head mounting portion on which an ink-jet printing head capable of ejecting ink supplied from the ink tank is mountable; and

moving means for relatively moving the ink-jet printing head and a printing medium.

105. An ink-jet printing apparatus comprising:
5 a head mounting portion on which an ink-jet printing head as claimed in Claim 94 is mountable;
a tank mounting portion on which an ink tank capable of supplying ink to the ink-jet printing head is mountable;
moving means for relatively moving the ink-jet
10 printing head and a printing medium.

106. An ink-jet printing apparatus as claimed in Claim 104 or 105, wherein
the moving means moves the ink-jet printing head
15 together with the ink tank relatively with respect to the printing medium.

107. An ink-jet printing apparatus as claimed in Claim 104 or 105, further comprising:
20 negative-pressure loading means which is able to introduce negative pressure into the ink tank; and
ink loading means for loading ink into the ink tank using negative pressure in the ink tank.

25 108. An ink-jet printing apparatus as claimed in Claim 104 or 105, further comprising:
a joint for releasably connecting between the

negative-pressure loading means and the ink tank, and for releasably connecting between the ink loading means and the ink tank.

5 109. An ink tank as claimed in Claim 89, wherein the gas-liquid separating means is provided with a member made of a porous material with an oil repellent finish.

10 110. An ink tank as claimed in Claim 109, wherein the gas-liquid separating means is an gas-permeable membrane made of a material selected from a tetrafluoride ethylene resin, a polyolefin resin, and other porous resin materials, which is subjected to an oil-repellent finish.

15 111. An ink tank as claimed in Claim 109, wherein the gas-liquid separating means is an gas-permeable membrane made of a material selected from porcelain, unglazed pottery, ceramic, and other porous materials,
20 which is subjected to an oil-repellent finish.

25 112. An ink tank having a bag-like tank body which is made of a sheet of a thin film that is folded down in one side to form a folding part, and which is capable of storing ink, wherein

the folding part forms a connecting portion capable of connecting between the inside and the outside of the

tank body by means of a hollow conduit that is able to penetrate the folding part.

113. An ink tank as claimed in Claim 112, wherein
5 outer edge portions of the sheet except the folding part are bound by heat to form the tank body.

114. An ink tank as claimed in Claim 112, wherein
10 the sheet is shaped as a flat rectangle and is folded down in two to form the folding part, and outer edge portions of the sheet other than the folding part are thermally fused to form the tank body.

115. An ink tank as claimed in Claim 112, wherein
15 a seal member which is capable of sealing between an outer peripheral portion of the hollow conduit and the connecting part.

116. An ink tank as claimed in Claim 112, further
20 comprising:
a tank case for containing the tank body, wherein the tank case has an opening for exposing the connecting portion outward.

25 117. An ink tank as claimed in Claim 116, wherein the tank case has a positioning portion for positioning at least one part of an outer peripheral

portion of the tank body.

118. An ink tank as claimed in Claim 116, wherein
the tank case is constructed as a combination of a
5 first case and a second case, which are substantially
symmetrical with each other.

119. An ink tank as claimed in Claim 118, wherein
the tank body has at least one positioning hole, while
10 a positioning protrusion to be engaged in the positioning
hole is formed on at least one of the first case and the
second case.

120. An ink tank as claimed in Claim 118, wherein
15 the opening is formed on a joint portion between the
first case ant the second case.

121. An ink tank as claimed in Claim 116, wherein
a neighboring area of the tank case with respect to
20 the opening and a neighboring area of the tank body with
respect to the connecting portion are bonded by an adhesive
agent.

122. A printing apparatus capable of printing of an
25 image using ink in the tank body, comprising:

a tank mounting portion on which an ink tank as claimed
in Claim 112 is mountable, wherein

a hollow conduit that is able to penetrate the connecting portion of the tank body and is provided at the tank mounting portion.

5 123. A printing apparatus as claimed in Claim 122, wherein

the hollow conduit has a tip portion in the shape of a needle.

10 124. A printing apparatus as claimed in Claim 122, further comprising:

a head mounting portion on which an ink-jet printing head capable of ejecting ink is mountable; and

15 an ink-supplying passage that supplies ink to the ink-jet printing head from the ink tank through the hollow conduit.

125. A printing apparatus as claimed in Claim 124, wherein

20 the printing head is provided with electrothermal-converting elements that generate thermal energies as energies of discharging ink.